Volunteer Lake Assessment Program Individual Lake Reports

STEVENS POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	445	**Max. Depth (m):**	5.2	**Flushing Rate (yr^{1})**	4.9
Surface Area (Ac.):	15	**Mean Depth (m):**	2.8	**P Retention Coef:**	0.51
Shore Length (m):	1,075	**Volume (m^{3}):**	176,000	**Elevation (ft):**	315

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1997	EUTROPHIC

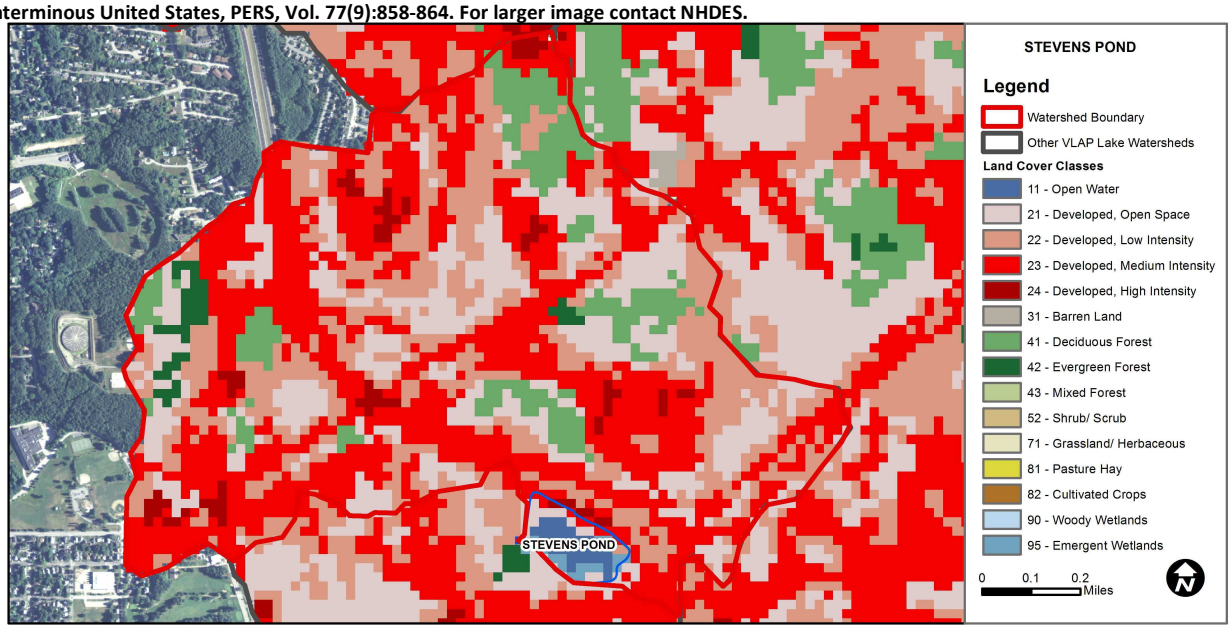
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

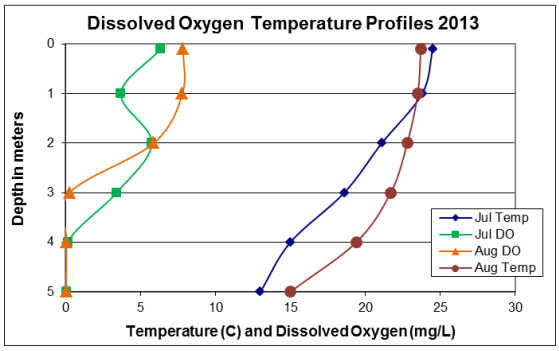


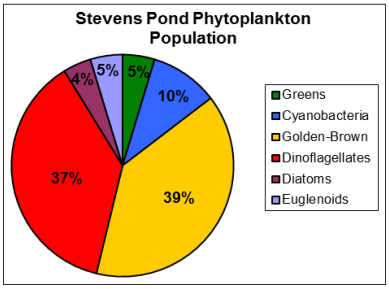
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	20.7	Deciduous Forest	7.98	Pasture Hay	0
Developed-Low Intensity	26.3	Evergreen Forest	1.45	Cultivated Crops	0
Developed-Medium Intensity	38.4	Mixed Forest	0	Woody Wetlands	0
Developed-High Intensity	2.82	Shrub-Scrub	0	Emergent Wetlands	0.52

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
STEVENS POND, MANCHESTER, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June, increased to elevated levels in July and decreased slightly in August. Average chlorophyll levels decreased greatly from 2012 however remained greater than the state median. Historical trend analysis indicates highly variable chlorophyll between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and Outlet conductivity and chloride levels were elevated and much greater than the state medians. Historical trend analysis indicates significantly decreasing (improving) epilimnetic conductivity since monitoring began. We hope to see this continue!
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were lower than normal in June however increased in July and August and were greater than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Hypolimnetic phosphorus increased as the summer progressed and as a result of internal phosphorus loading due to anoxic conditions. Metalimnetic and Outlet phosphorus levels were elevated and remained stable throughout the summer.
- **TRANSPARENCY:** Transparency was good in June due to the low levels of algae how decreased in July and August when algal growth was elevated. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic turbidity increased as algal growth increased. Hypolimnetic turbidity was elevated in July and August due to the release of organic compounds from bottom sediments under anoxic conditions. Metalimnetic turbidity was slightly elevated on each sampling event. Outlet turbidity was slightly elevated in August.
- **PH:** Average pH levels were sufficient to support aquatic life however have historically been outside the desirable range 6.5 – 8.0 units. Historical trend analysis indicates stable eplimnetic conductivity since monitoring began.
- **RECOMMENDED ACTIONS:** Stevens Pond is located in a highly urban environment lending itself to poor water quality including elevated conductivity, chloride and nutrient levels. The decreasing conductivity trend is a good sign and hopefully will continue with the adjustment of winter road maintenance activities. Keep up the great work.





Station Name	Table 1. 2013 Average Water Quality Data for STEVENS POND								
	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Epilimnion	30.7	8.02	175	786.7	26	2.45	2.83	1.30	7.02
Metalimnion				819.3	27			2.00	6.80
Hypolimnion				1194.3	62			11.69	6.64
Outlet				784.3	21			1.12	6.81

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
Conductivity	Improving	Data significantly decreasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.